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ABSTRACT

Most research on economics education has focused on the production function for teaching economics in colleges and universities. This concentration on higher education is notable because the majority of students never go to a four-year college. They therefore have access to formal economics education only in high school or junior college, if at all. Moreover, the concentration of the research on teaching in schools (at any level) overlooks the fact that most people never have and never will take an economics course. For these people, learning economics occurs through newspaper columns, magazine articles, television, and other mass media. But research on the effectiveness of these mechanisms is essentially nil. Whatever the effectiveness may be of current means of teaching economics, and whatever the associated costs, a key question remains: What incentives exist for the adoption of efficient instructional approaches? Do the instructors or administrators who choose the production techniques to be used in teaching economics (e.g., professors versus teaching assistants, larger versus smaller class sizes, one textbook versus another) have the incentives to choose efficiently? This is another important area on which the existing research on economic education is silent. (Author/GC)

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INSTITUTE FOR RESEARCH ON POVERTY DISCUSSION PAPERS

RESEARCH ON ECONOMIC EDUCATION: IS IT ASKING THE RIGHT QUESTIONS?

Burton A. Weisbrod

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Research on Economic Education: Is It Asking the Right Questions?

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ABSTRACT

The bulk of research on economics education has focused on the production function for teaching economics in colleges and universities. This concentration on higher education is notable because the majority of students never go to a four-year college; they therefore have access to formal economics education only in high school or junior college, if at all. Moreover, the concentration of the research on teaching in schools (at any level) overlooks the fact that most people never have and never will take an economics course; for these people, learning economics occurs through newspaper columns, magazine articles, television, and other mass media. But research on the effectiveness of these mechanisms is essentially nil.

Whatever the effectiveness may be of current means of teaching economics, and whatever the associated costs--the latter being another area that has received scant attention in the literature--a key question remains: What incentives exist for the adoption of efficient instructional approaches? Do the instructors or administrators who choose the production techniques to be used in teaching economics--e.g., professors versus teaching assistants, larger versus smaller class sizes, one textbook versus another--have the incentives to choose efficiently? This is another important area on which the existing research on economic education is silent.

Research on Economic Education:
Is It Asking the Right Questions?

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1. INTRODUCTION

The division of responsibility between the two papers at this session is a fascinating one. One author has agreed to examine the questions that are being asked in the economics-education literature, and the other to examine the answers!

As is so often the case, however, the underlying assumption of separability does not hold. A research question is not a "good" or "bad" question independent of the quality of the answers it is likely to generate. An "exciting" question that is unlikely to yield an answer of substantial value is not a good question. Research is a production process in which something called "useful knowledge" is the output. The inputs to this process include both the specification of questions that are important--in the sense that the answers would have great expected value--and the marshaling of resources (i.e., the incurring of costs) to answer the questions.

If the costs of answering all research questions were equal, or were random with respect to the significance of the question, then the separability of the decisions on question specification and on question answering would be justified. What we probably confront, however, is a

less fortuitous set of conditions in which the questions that are most valuable to answer are also the most costly (i.e., difficult). The issue I have been asked to deal with--whether research on economic education is asking the right questions--thus involves implicitly the performance of a benefit-cost analysis on project selection in the area of economic education research. An evaluation is needed of (a) the expected benefits (more precisely, the probability distribution of benefits conditional on answers of various quality), and (b) the expected costs, of obtaining answers of each quality.

It is possible, of course, that a particular research question may be a good one in the efficiency sense that the expected costs of researching it are less than what the expected benefits would be <u>if</u> the resources devoted to the research were used as productively as possible; yet if the resources were not used so productively, it might fail the allocative efficiency test. Thus, a question could be <u>potentially</u> efficient to research but <u>actually</u> inefficient. In any event, the "best" questions to research are those for which the excess of the value of the expected answers (benefits) over the expected costs of the research are maximized. Deciding which are the "right" questions to research implies a benefit-cost (efficiency) analysis for the prospective project that is essentially the same as for any other resource-using project, such as in water resources or manpower training. Thus, upon careful scrutiny the imaginative effort by the organizers of this session to break a monstrous evaluation task into two distinct evaluations fails to pass the test of separability.

Despite my conclusion regarding the simultaneity of judgments on which are the right (best) questions to ask and on the costs and quality of expected answers, I shall proceed. In the remainder of this paper, I try to identify the nature of the research questions that have been posed in the economic education literature, and the nature of the questions that have not been posed. I will comment on whether the overall research program--the set of questions being asked--is what it "should" be, and attempt to point to researchable themes that are likely to have relatively high returns for research in this field.

2. ECONOMIC EDUCATION AND GENERAL EDUCATION

One basic question is, Why study economic education at all? What reasons are there to believe that the subject matter of economics is sufficiently special so that the voluminous general literature on teaching and education is not applicable to economics?[1] I have not seen this question posed in the more than 150 papers I have surveyed in the Journal of Economic Education, (JEE) and in the annual American Economics Association sessions on economic education.[2] (There are, of course, papers on economics education published elsewhere, but my survey does not extend much beyond these two "official" AEA sources.) My point is simple: Is there not a substantial probability--indeed, perhaps not a presumption--that researchers studying economics education are "rediscovering the wheel," posing and answering questions that have been answered previously in the more general research on education? For example, is it not likely that the effect on "learning" of, say, class size, or of the use of teaching assistants rather than more

experienced professors, or of individually self-paced approaches rather than a traditional uniform, instructor-paced approach, is similar for all subjects? I do not assert that the answer is obvious and affirmative. I only question whether it is a "high priority" research matter to devote substantial resources to general questions of teaching techniques, questions that are not specific to the teaching and learning of economics and that have been studied extensively in other subject matter contexts. It may well be true that, as one economist at an AEA session on economic education recently put it, "Educational production functions are at least as interesting as those for hybrid corn" (Allison, 1976, p. 228). Nonetheless, it would not follow that production functions for economic education are efficient topics for economists' research.

3. THE PRODUCTION FUNCTION FOR ECONOMIC EDUCATION

What research has been undertaken in economics education? Most of it is devoted to exploring some portion of the production function for economics education. Of the 159 papers surveyed, I count 102--essentially two-thirds--dealing either with how to define and measure outputs (23 papers), or with the effect on output of various alternative inputs (79 papers). This production function orientation is consistent, however, with the Journal of Economic Education's (JEE) goal as stated inside the front cover: "To promote the teaching and learning of economics in colleges, junior colleges and high schools by sharing knowledge of economic education."

Table 1 presents the 79 input-output oriented papers according to the principal type of input the productivity of which was being studied, and according to the level of schooling. Since each paper was counted only once, while some papers touched on more than one input or school level, the table is an incomplete portrayal of the research foci.

I have classified the independent variables in the production function as capital, labor, students themselves, course content, and instructional methods (ways of combining inputs). An impressive variety of variables have been researched. I cannot judge whether some inputs that have received little or no attention are "worth" studying--for example, the output effects of the time of day that the class is held (but see Mirus, 1973), the color of the classroom walls, or the seating arrangements.

Interaction Effects

What is probably a more serious omission is the lack of examination of interaction effects among input variables. It seems likely, for example, that a particular type of textbook (input IA) when used by graduate teaching assistants (IIB) will be more effective for low-ability students (III) than they would be for high-ability students. Similarly, games and simulations (input VA) may be differentially effective depending on whether instructors (IIA) or graduate assistants (IIB) are used and depending on the student's intital level of motivation (III).

Limited Scope

Another striking aspect of Table 1 is the overwhelming emphasis on teaching at the college level (77 percent of the papers). The JEE goal,

Table 1

Number of Articles on Various Production Function Relationships for Economics Education, by Type of Input and Level of School

Type of Input	Level of School: Elementary And High	Junior College	College	Graduate	Non-School	All Levels	
I. Capital							
A. Textbooks	2		2			4	
B. Computers			9			9	
C. Television, slides, etc.		1	5		1	7	
						20	(25%)
II. Labor							
A. Instructors	6	1	4			11	
B. Graduate Assistants			5			5	
C. Consultants	1					1	
						17	(22%)
III. Students (ability, motivation, family background, other students)	1		4			5	(6%)
IV. Course Content (subject matter)	2	2	7			11	(14%)
V. Instructional Methods (ways of combining inputs)							
A. Games and Simulations		1	7			8	
B. Learning contracts, self-paced instruction and programmed learning			11			11	
C. Lectures			1			1	
D. Course evaluations			4			4	
E. Length of course			1			1	
F. Class size			1			1	
						26	(33%)
Total	12 (15%)	5 (6%)	61 (77%)	0	1 (1%)	79 (100%)	

stated above, refers to "colleges, junior colleges and high schools." The scant attention of economics education researchers to high schools and junior colleges is noteworthy, given that half of young people do not go beyond high school, and that those who do go further are increasingly likely to go to a junior college. (Examples of research on economic education in junior colleges are Weidenaar and Dodson (1972) and Lewis, Wentworth and Orvis (1973). For a precollege focus, see Fels (1977) and Duff (1971). It may or may not be true that the production function findings for the college population apply also to the junior colleges and high schools; the issue merits attention. Students' ability and motivation levels (as well as the variances in those levels) vary across the schooling levels; thus, the interactions of these student characteristics with other, conventional inputs will produce, I hypothesize, different output effects depending on the level of school.

The narrow scope of teaching settings on which research has been published is also evident from the dearth of attention to the production function for teaching eccnomics either in graduate schools (see, however, Hansen (1971) and Decker (1973) for models predicting success in graduate economic studies) or in nonschool settings such as in the home via television (see Coleman, 1963) or via popular journalism (magazines and newspapers). How "effective," for example, have been the syndicated newspaper columns of writers such as Sylvia Porter; the Newsweek columns by Milton Friedman and Paul Samuelson; the articles in magazines such as Challenge or Public Interest, or in daily newspapers? How effective--and for whom--are the efforts of private firms to provide "economic education" via

newspaper advertisements (e.g., Mobil Oil on energy issues)? These are unanswered--indeed, unasked-questions. Yet, the vast majority of people have not taken and never will take a formal economics course in any school, and they will be exposed to economics only through such informal media. Thus, the production function for learning economics outside traditional schools seems to warrant substantial exploration--assuming, of course, that economics is worth the opportunity cost of learning it. The omission of nonschool teaching and learning of economics from the JEE statement of policy is unfortunate.

Distributional Effects

I turn next to a related aspect of the production function work: the distributional effects of alternative course contents, input combinations, and instructional materials. These have been studied to some extent (for example, Attiyeh and Lumsden, 1972; Hansen, Kelley and Weisbrod, 1970; Thompson, 1970); yet, given the evidence from the general literature on education that a given approach is likely to have substantially different effects on different "types" of students, this dimension seems to deserve more scrutiny. Whatever the mean differential may be between the output effects of different inputs, examination of the variance about the mean may disclose systematic differences among students according to characteristics that are discernible at the outset of a course.

4. OUTPUTS

Goals of Economic Education

The body of research presented in Table 1 focuses on the productivity of various inputs; the dependent variable--output--is generally taken as given, typically in the form of some test score. There is, however, substantial other literature--not in the input-output framework--discussing the normative question of how output ought to be defined and measured. There are papers that discuss the "usefulness" of a specific output measure, particularly the Test of Understanding in College Economics (TUCE) (for example, see Lewis and Dahl, 1971; and Fels, 1977). Other concepts and measures of outputs on which papers have been published include changes in student political attitudes (Scott and Rothman, 1975) the students' own judgment of effectiveness (Kelley, 1972); learning "radical" economics (Edwards and MacEwen, 1970; Gurley, 1975); and developing problem-solving abilities (Fels, 1973). In addition, the durability or permanence of the effects, as distinguished from measures of effectiveness obtained at completion of the course, has received a little attention (see Saunders, 1970; and Saunders and Bach, 1970).

Overall, however, the question of what economics education ought to be aiming at--that is, which outputs should be produced--is a question that has received little rigorous analysis. The question of what kind or kinds of "economic education" to produce is a difficult one. Should it be idealogically oriented? Should it provide whatever "buyers"

want? Who are the buyers--parents? taxpayers? students? Our customary consumer-sovereignty model appears to be of limited guidance here, given widespread consumer ignorance of the importance of economic knowledge, and given the external benefits from having a population that is more sophisticated in its understanding of economic processes. In economics education, as in many other "professional" markets, buyers are poorly informed regarding product quality. Even if buyers know their objectives, they may know little about the effectiveness of particular activities in achieving those objectives.

My references to "consumer ignorance" and to "external benefits", however, are scarcely more than assertions. I have seen little research that rigorously confronts the question of whether there is a market failure in the economic education market, with too few people studying too little economics or studying the "wrong" economics. The published research either asserts that more economics is "good"--and presumably is better than some unspecified alternative uses of student time and other resources--or else the research asks the narrower production-function question of how effective one type of input is compared to another, without asking whether the output is worth producing. In volume 1 of the JEE Stigler (1970, p. 78) did pose the question, "Why should people be economically literate, rather than musically literate, or historically literate, or chemically literate?" I must resist the temptation to discuss his answer--except to note that musicians, historians and chemists may see things differently.

Effectiveness versus Allocative Efficiency

The domination of a production function emphasis in economic education research has, in short, obscured the related issue of the allocative

efficiency of alternative input combinations. Many papers have examined the effectiveness (productivity) of various inputs, but rarely have the relative costs of the inputs been juxtaposed to the relative effectiveness, nor have the measures of effectiveness been translated into values of benefits. These questions have seemingly been overlooked or, at least, slighted.

I find it surprising that among the (admittedly small number of) papers confronting the question of how to define the output or outputs of economic education, there has been so little attention to labor market effects in general, and earnings effects in particular. The contrast between the economic education literature and economics of education literature is dramatic. The latter has concentrated, typically within a human capital theoretic framework, on the relationship between education (meaning schooling) and earnings, virtually disregarding the process through which educational inputs produce the outputs that have value in the labor market. Another way of saying this is that the economics of education literature has viewed earnings as the value of outputs. Meanwhile, the economic education literature has concentrated heavily on the process of converting inputs into outputs in nonpecuniary forms, virtually disregarding the valuation of outputs.

One might have predicted a priori that the economic education literature would have included numerous efforts to assess the labor market value of economics training either directly or indirectly through its effect on, say, the probability of admission to law school. Why the economic education literature and the economics of education literature have been so divergent,

and whether either, or both, or neither has pursued an "optimal" path are questions which I raise here, but will not pursue far.

Lifetime Effects

One further observation, however. The human capital framework, within which much of the economics of education literature has been cast, has focused research attention on the investment aspect of schooling (typically in broad units such as high school or college, though sometimes in narrower program units such as vocational training or even Ph.D. training in economics). The investment emphasis implies a lifetime perspective on the outputs of schooling. By sharp contrast, the economic education literature has concentrated overwhelmingly on the immediate outputs, those measured at the completion of the course. As pointed out above, there have been a few noteworthy exceptions, in which the durability of outputs has been considered, though even these have involved a horizon of only a few years or so (Saunders, 1970; Saunders and Bach, 1970). It may well be exceedingly difficult to measure lifetime effects of exposure to economics, and this may explain the lack of attention to this question in the literature. (This would illustrate the interrelatedness of the "do-ability" of research and the formulation of research questions.) But the fact remains that little effort has been devoted to the measurement of lifetime effects.

5. INCENTIVE STRUCTURES

Another underresearched area is the nature of incentive structures facing teachers and administrators. Assume that (1) the production function

research disclosed that certain inputs are more effective than others, (2) consensus was reached on appropriate measures of outputs (i.e., effectiveness), and (3) outputs and inputs were valued and showed positive net benefits from a change in current teaching practices. Would the changes occur? Are there incentives sufficient to encourage changes that are efficient (granting that such changes can be identified with reasonable confidence)?

These questions, it might be argued, transcend economic education. It would seem, however, that the responsiveness of teachers and administrators of economic education programs may or may not be the same as for those in noneconomics areas; at least this hypothesis cannot be ruled out, any more than can the hypothesis that variation in class size, or in the effectiveness of teaching assistants or the use of television instruction differs as between economics and other subject areas.

The nature of incentives confronting teachers--of economics or of anything else, and at various levels of schooling--has received scant attention. There are possible incentives for instructors (a) to learn which changes are efficient, and (b) to make those changes. (On the latter point, however, studies of salary determination at universities [e.g., Siegfried and White, 1973; Koch and Chizmar, 1973] have shed some light on the financial returns to scholarly research, teaching, and other uses of faculty time.) It is arguable that little is to be gained from research on <u>how</u> to "improve" teaching if the <u>incentives</u> to adopt improved methods are weak. It is also arguable, on the other hand, that incentives are weaker than they might be because there is so little agreement as to what constitutes efficient teaching; this, after all, involves the specification of goals in operational terms and the

adoption of value weights for the multiple goals that surely exist. Thus, understanding goals and weights is one part of the research agenda for efficient innovation in education.

In any analysis of incentives in education the relationship between private costs and social costs (or returns) is likely to be crucial. As an illustration, consider the case of an economics instructor who is free (although many are not) to select any undergraduate textbook, and that a new textbook appears on the market. There may well be little incentive (financial, professional, or any other) to read the new textbook carefully enough to determine whether it is superior to the one being used; this, however, is not my principal point. What if the instructor knew--costlessly and with certainty--that the new book was "more effective" for all of his students; what would be the private and social costs and benefits of adopting the new book? Of course, "more effective" need not imply "more efficient."

From the students' viewpoint, the new book would presumably be preferred it if were more effective. Such a preference, in turn, embodies two deeper assumptions: (a) the similarity of student goals and of faculty goals for students, and (b) the absence of higher costs (time, effort, money) for using the new book that offset the benefits of increased learning.

Note, however, that while the student must incur the cost of reading whatever textbook is chosen--so that this is essentially a fixed cost--the faculty person bears an increased real social cost of changing, since he or she has lecture notes keyed to a textbook that has already been read. With the benefits of change accruing to students while the costs are borne by faculty, the likelihood of market failure is substantial.

The market failure would disappear, however, if the instructor internalized the students' benefits. This might appear to be the case if the instructor acted as an idealized "professional"--that is, acted as the consumer's agent for maximizing the consumer's (student's) utility. Education is an example of a commodity--like medical care and legal representation--in which consumers are aware of their inability to judge quality, and so they place trust in the professional to act in their best interest. Even if the instructor were to behave, however, so as to maximize not his or her own utility but that of students (or parents, or taxpayers), it would not follow that efficient resource allocation would result. The reason is that the cost of switching textbooks (or, in general, of changing anything in the teaching process) is a real cost; if it were to be disregarded--as would be the case if the instructor were to act so as to maximize the consumer's utility--the result would be excessive change.

The market failure would also disappear if the reward structure were such that the instructor's pay were an appropriate function of the "value added." Then, if students learned more from the new text, the instructor--acting in self-interest--would weigh the costs of changing books against the benefit, and would choose accordingly. Ideally, the rewards would be commensurate with the student benefits, and so--assuming away real external effects and other market imperfections--the instructor would be confronted with the real costs and benefits of change. The problems of developing such a reward system are doubtless great. It does not follow, however, that they are not researchable.

These remarks have been abstract; meat must be put on the analytic bones. I hope that the next time the economic education literature is surveyed there will be found more papers exploring incentives for innovation and efficiency--in both positive and normative dimensions.

6. CONCLUDING REMARKS

It is all too simple to find questions that one would like other researchers to tackle, as I have done here. Thus, I should close by reiterating my claim made at the outset that the selection of optimal research questions is, in principle, a matter of weighing benefits and costs, of comparing the value of having answers to the costs of obtaining them. If the costs are sufficiently high, it would be inefficient to research questions that seem important. Some of the questions to which I have pointed probably fail such a benefit-cost efficiency test, and so have received, quite wisely, little research attention; other questions, however may pass it--at least for some researchers--and so merit more study. Once more we can conclude that "more research is needed."

NOTES

[1]This not to say that there is nothing special about the teaching of economics. Economists typically believe, for example, that people have more misinformation and biases concerning economics than about other subject matters. (Mark Schlesinger pointed this out to me.) Even if this is true (see Boulding, 1975) the question would remain whether resources devoted to teaching economics should be deployed differently than in other subjects.

[2]For an excellent survey of research on educational production functions, see Hanushek (1977).

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